

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 6 of 19

REMARKS

Entry of the amendments is respectfully requested. Claims 1-20 are pending in the application. Claims 1, 2, 4, 7-11, 13, 14, 16, 18 are amended, and new claims 19 and 20 are added. Favorable reconsideration and allowance of this application is respectfully requested in light of the foregoing remarks.

A. Rejection Under §112, first paragraph

Claims 1-18 stand rejected under 35 USC §112, first paragraph, as allegedly not being enabled by the specification as originally filed.

In the Final Rejection and the Advisory Action, the Examiner contends that the specification does not disclose the necessary structure for generating a horizontal force perpendicular to a longitudinal axis of the device so as to cause a yawing movement. The Examiner contends that the mere claiming of two eccentric weights that can act in opposite directions is insufficient to enable this function. This rejection is again respectfully traversed. While it is true that the application does not claim or even disclose every detail of any particular embodiment of a device steered in the manner claimed, the disclosure, coupled with the knowledge of one skilled in the art, provides more than ample information to permit one skilled in the art of vibration plates to make and use the invention without undue experimentation.

As noted throughout the prosecution, the fact that some details of the preferred embodiment are not disclosed is irrelevant where, as here, those details are known by or can be easily produced by those skilled in the art. Indeed, "a patent need not teach, and preferably omits, what is well-known in the art." MPEP §2164.01, citing, e.g., *In re Buchner*, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991). In the present case, applicant does not profess to be the first to develop a steerable compaction plate, i.e., one that is steered by altering its

{00066672.DOC \}

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 7 of 19

vibration characteristics to impose side-to-side or yawing forces on the machine. Steerable compaction plates are well known. For example, the application states that it is known to steer a compaction plate by altering the relative phase relationship of two eccentric weights on an unbalanced exciter:

“Soil compaction devices of this type, for example a vibration plate with the type designation “Wacker DPU 7060”, *are well known* and have proven themselves in practice to be excellent, especially in compacting mainly coarse-grained or weakly agglomerating soils. Here, an oscillator driven by a motor is attached to a soil contact plate and sets the soil contact plate into vertical oscillation which then is transferred to the soil. The oscillation produced usually has a constant or even a variable horizontal force component that provides a forward, backward or *steering motion of the vibration plate*. In the process, the horizontal motion of the vibration plate is supported by the operator through a center guide post or a guide handle. At the center guide post, an operating lever can be provided that is coupled to hydraulic valves, with the help of which the direction of motion of the vibration plate can be adjusted using a hydraulic positioning system. Another known method is to perform the steering and direction functions using a remote control unit. In these remote controlled plates, *the steering is commonly done by providing the oscillator with separate eccentric weights that are adjusted so as to work against one another and produce a circular or yawing motion of the machine*”

Specification, page 1, line 7-21. (Emphasis added)

The DPU 7060 machine referenced above has been commercially available since 1979. Applicant states in the specification that machines of this type are well known to those skilled in the art. That statement, being under cover of the declaration filed with the application, must be accepted as true unless the Examiner cites a reasonable basis for doubting it. *In re Chu*, 36 USPQ2d 1089 (Fed. Cir. 1995). The Examiner has not done so.

The manner in which the disclosed invention is steered is well known to those skilled in the art. In applicant's response to the Final Rejection, Applicant intended to provide documentation illustrating knowledge of certain aspects of the steering mechanism in the

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 8 of 19

applicable field of art. Unfortunately, the Appendix with the attached documentation was not included in applicant's response. Applicant now properly resubmits its evidence illustrating knowledge in the art of the disputed aspects of the steering mechanism of the present invention. Specifically, attached hereto as Appendix A, is a 1981 technical bulletin and translation from Wacker-Werke KG, a leader in the applicable field of art. Figure III of the technical bulletin shows the control of the phase relationship of the two eccentric weights on one shaft of the machine (the lower shaft in the figures) in one manner to achieve left hand steering, and Figure IV shows control of the phase relationship of those weights in another manner to achieve right hand steering.

The same type of control is disclosed in the present application when describing the operation of the preferred embodiment:

"In a known fashion, the positioning unit changes the position or phase of the rotating eccentric masses with respect to one another, whereupon the horizontal component of the resultant overall force changes and a change in the directional behavior of the vibration plate is produced."

Page 2, lines 19-22.

"The shafts 1, 2 as well as the eccentric masses 3, 4 can each be separated in the axial direction so as to produce a yawing moment – at the right phase relationship – which makes the vibration plate rotate at a point or – with simultaneous forward motion – travel about a curved radius.

The change of the phase relationship of the shafts 1, 2 to one another as well as the phase relationship of two eccentric masses on one shaft is done using a known positioning unit in which suitable control elements, not shown, are shifted by means of a hydraulic system 6, which is also a part of the positioning unit. The fluid stream in the hydraulic system 6 can be influenced in various ways according to the state of the technology."

Page 3, line 23 through page 4, line 2.

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 9 of 19

If, as shown in Fig. 2, two independently moving control handles 8 are provided, not only can the direction of travel (forward, backward, standstill) of the vibration plate be adjusted, but also a steering or circular motion can be accomplished, provide the oscillator is so equipped.

Page 5, line 32 through page 6, line 1.

Without ever viewing the attached Appendix A, the Examiner stated in the Advisory Action that the showing in the Appendix would be irrelevant to the invention cited in the specification, because Appendix A shows two eccentric weights on one shaft while the invention cited in the specification requires at least a pair of shafts separated in the axial direction. Applicant respectfully disagrees with the Examiner's conclusion. The base principle of using eccentric weights to steer a vibration plate is clearly shown, described, and enabled in the technical paper included in Appendix A. The explanation provides an enabling disclosure for steering systems incorporating a single shaft, or multiple shafts, as the base principle of using the eccentric weights to steer a vibration plate remains the same, regardless of the number of shafts utilized.

As noted throughout the prosecution, the novelty of the present invention does not lie in the ability to steer a vibration plate through the adjustment of its oscillator's eccentric weights, e.g., through the control of a positioning unit, such as one containing hydraulic valves. That concept is well known. What is new is the control of such a positioning unit by electronically sensing the position of an operator element such as a joystick or a pair of levers and generating a corresponding signal that is transmitted to the positioning unit to effect the desired steering and directional control functions.

In the Advisory Action, the Examiner further objected to what he characterized as the applicant's opinion that one skilled in the art would be capable of making the claimed invention. Specifically, the Examiner stated that "a general allegation that one in the art would be capable of making and using a machine meeting the limitations of the claims is not

(00066672.DOC \1)

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 10 of 19

evidence that the specification enables any person... to make and use the invention commensurate in scope with these claims.” In response to the Examiner’s objection, applicant submits the declaration of Michael Steffen. Mr. Steffen is a research and development engineer at Wacker Construction Equipment AG and based on his education and experience, clearly qualifies as one skilled in the relative inventive field of art. Mr. Steffen’s declaration clearly attests to the fact that one skilled in the art could practice the invention as claimed from the application as filed. The declaration further notes that the attached Wacker technical papers adequately teach the use eccentric weights on a single or multiple shaft system.

Finally, the Examiner argued in the Advisory Action that claim one is contradictory to the passages recited on page 3, lines 19-22 of the specification. Specifically, the Examiner stated that “in order for the eccentric masses to rotate in opposite directions, the masses must be on the same shaft or co-axial shafts, whereas the specification discloses shafts that are separated in the axial direction.” The Examiner’s comments are simply not correct. As the Examiner himself acknowledges, “a yawning moment could in fact be created by a vertically oriented pair of parallel eccentric shafts.” Contrary to the Examiner’s suggestion, such an embodiment is specifically contemplated and disclosed by the present invention.

In light of the arguments and evidence presented above, withdrawal of the rejection under 35 USC §112, first paragraph, therefore is believed to be in order and is respectfully requested.

B. Rejections Based on Prior Art

All claims stand rejected under 35 USC §103(a) as being unpatentable over the prior art. Specifically:

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 11 of 19

- Claims 1, 3-5, 13, 15-17 stand rejected as being obvious over *Waschulewski* in view of *Crum et al.*;
- Claims 1, 3-5, and 8 stand rejected as being obvious over *Stoecker* in view of *Ishibashi et al.*;
- Claims 2, 10, and 11 stand rejected as being obvious over *Stoecker* in view of *Ishibashi et al.* and *Riedl*;
- Claim 9 stands rejected as being obvious over *Stoecker* over *Ishibashi et al.* and further in view of *Artzberger*;
- Claims 1-6, 8, 13, and 15-17 stand rejected as being unpatentable over *Riedl* in view of *Crum et al.*;
- Claims 10-12 stand rejected as being unpatentable over *Riedl* in view of *Crum et al.* and further in view of *Sutherland*;
- Claim 7, 14, and 18 stand rejected as being obvious over *Riedl* in view of *Crum et al.* and further in view of *Garnjost*; and
- Claim 9 stands rejected as being unpatentable over *Riedl* in view of *Crum et al.* and further in view of *Artzberger*.

These rejections are respectfully traversed.

I. Recapitulation of the Invention

Referring to the drawings by way of explanation, the invention¹ relates to an improved system for controlling the operation of a compaction plate machine (often known as a “vibratory plate machine”) so as to reduce operator fatigue. As should be apparent from Section A above, compaction plate machines are well known that can be both controlled directionally (i.e., for and aft) and steered (i.e., left or right) remotely from the operator by manipulation of buttons or control handles. As explained on page 1 of the present application, the operator of prior machines must activate the machine’s positioning unit by pressing buttons on the remote control and pushing buttons on the guide handle at the same time. This simultaneous operation requires a large amount of force because the guide handle of the prior remote controlled machine is much shorter than the center guide post of the prior non-remote controlled machine such as the Wacker DPU 7060 machine described above. In

¹ This Section B (1) generally describes the state of the art and applicant’s contribution to it. It is not intended to specifically distinguish the claims from the prior art. That task is performed in Section B (2) below.

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 12 of 19

addition, because the operator must simultaneously activate other operator elements such as control sticks, push buttons, or the like, he can only hold the machine's guide handle with one hand. This type of operation is very strenuous for the operator.

The invention overcomes this problem in a remarkably simple and effective manner that permits an operator to activate the positioning unit of a compaction machine in a simpler and less fatiguing manner than in prior machines. Specifically, the system is servo controlled to the extent that an operator element, such as a joystick or a pair of levers, can be manipulated by an operator to generate a control command that is used to electronically activate the positioning unit. Hence, in the case of a machine having an operator element in the form of two control levers 8, an operator could push both levers forwardly to command the machine travel straight ahead, pull both levers rearwardly to command the machine travel backward, or push the levers in opposite directions to command the machine to effect a left hand or right hand turn. A sensor unit 11, such as a Hall Effect sensor or a proximity switch, senses the position of the control levers 8 and converts that signal to an electrical signal. That signal is then fed to a hydraulic system controller that controls electromagnetic valves to shift the phase relationship of the shafts 1, 2 and the eccentric weights 3, 4 of the machine's oscillator to effect the desired steering movement in a manner that is, *per se*, well known. Hence, there is no need to simultaneously press buttons on a remote control unit and push buttons on a guide handle. The operator can instead hold onto the guide handle 7 with both hands during all phases of steering.

As will now be detailed, a device of this type is amply recited in each of the independent claims 1 and 13 is neither disclosed nor suggested by any combination of the prior art cited by the Examiner.

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 13 of 19

2. Traversal of the Rejections

a. Rejections Based on *Waschulewski* in View of *Crum et al.*

Claims 1, 3-5, 13, 15-17 stand rejected under § 103(a) as being unpatentable over *Waschulewski* in view of *Crum et al.*

Regarding claims 1 and 13, the applicant respectfully traverses this rejection because the cited references do not teach or suggest each and every element of the novel subject matter disclosed and set forth in amended claims 1 and 13. Specifically, claim 1, as amended, requires at least one manually engageable rotatable power steering control lever configured to control the positioning unit via an electric signal. Likewise, claim 13, as amended, requires a rotatable power steering control handle that is mounted on the guide handle and configured to generate electrical command signals upon manual engagement thereof for steering the soil compaction device and for controlling the direction of compaction device travel. Neither *Waschulewski* nor *Crum et al.* alone or in combination teach these limitations.

In response to applicant's previous arguments the Examiner stated in the Advisory Action that "claim 1 does not provide any structure features that would define the scope of the claimed operator element." Applicant believes that the amendment to claims 1 and 13 adequately addresses the Examiner's concern in that it requires a power steering control lever or handle that controls the positioning unit via an electric signal.

As noted in Applicant's previous responses, *Waschulewski* discloses a Bowden cable 60, which is one part of a complex mechanical shifting device that provides a mechanical link for shifting the compactor. As noted earlier, the Bowden cable, cannot steer the compactor. Shifting forces are generated by the operator and transmitted to the Bowden cable by some unspecified operator-manipulated structure. Those mechanical forces are then transmitted mechanically to the eccentric to effect a shifting operation. Such a shifting

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 14 of 19

operation does not equate to the claimed electrical steering operation. Furthermore, amended claims 1 and 13 require a rotatable power steering control lever and a rotatable power steering control handle respectively. The Bowden cable 60, disclosed in *Waschulewski* is only capable of movement in an axial direction. As such, *Waschulewski* does not teach the rotatable power steering control lever of claim 1 or the pivotable power steering control handle of claim 13.

Furthermore, Applicant reiterates that the Examiner has not provided any motivation to combine these references. The motivation to combine these references must come from the references themselves. Clearly, in addition to the fact that there is no explicit motivation provided by the references themselves, there was no motivation to combine these references at all, as doing so would require eliminating critical structure from the apparatus of the primary reference *Waschulewski*, namely, portions of the complex shifting arrangement including the Bowden cable. In other words, a complete re-design of the *Waschulewski* compactor would be required.

Thus, the references alone or in combination fail to teach or suggest the soil compaction device of amended claims 1 and 13. Dependent claims 2-12 and 14-20 are believed to be in condition for allowance for incorporating by reference the limitations of claims 1 and 13 and for defining additional features of the invention, which, when considered in combination with those of claims 1 and 13, are neither disclosed nor suggested by the prior art relied upon in the rejection.

In light of the amendments to claims 1 and 13 and the foregoing arguments, withdrawal of the rejection of claims 1-18 is respectfully requested.

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 15 of 19

b. Rejections Based on *Stoecker* in View of *Ishibashi et al.*

Claims 1, 3-5, and 8 stand rejected under § 103(a) as being unpatentable over *Stoecker* in view of *Ishibashi*.

Regarding claim 1, the applicant respectfully traverses this rejection because the cited references do not teach or suggest each and every element of the novel subject matter disclosed and set forth in amended claim 1. Specifically, claim 1, as amended, requires at least one manually engageable rotatable power steering control lever configured to control the positioning unit via an electric signal. Neither *Stoecker* nor *Ishibashi et al.* alone or in combination teach these limitations.

The Examiner states that *Stoecker* discloses an operating element in the form of handle 16 to control a positioning unit at 93, 111, and goes on to conclude that it would have been obvious to one of ordinary skill in the art to combine the *Stoecker* compactor with the position sensor of *Ishibashi et al.* Applicant respectfully disagrees. Similar to our previous argument with respect to *Waschulewski*, the handle 16 of the *Stoecker* compactor performs physical work to mechanically steer the compactor in contrast to the non-mechanical steering of the claimed power steering control lever of the present invention.

As noted in applicant's previous response, the handle 16 itself lacks the capability of either shifting or steering the machine. Shifting is instead performed by manipulating a separate shift lever 93 by kicking a kick plate 116. As with *Waschulewski*, manual actuation of the lever 93 through the kick plate 116 mechanically shifts the machine's linkage to change its direction of travel. As with *Waschulewski*, steering is performed purely manually. Moreover, in view of this fact, there was no motivation or suggestion in the references to combine the sensor of *Ishibashi et al.* with the *Stoecker* compactor as the combination would not yield the present invention as defined in the rejected claims. Incorporating the *Ishibashi*

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 16 of 19

et al. teaching in the *Stoecker* device would render the kick plate 116 useless. In other words, the combination would not include a power steering control lever operable as required by claim 1, and the combination therefore would not provide a teaching of all the limitations of the rejected claims. Even if one were to replace the kick plate with some sort of servo controller (of which many are undoubtedly known for unrelated applications), replacing the kick plate 116 with a servo controller would not produce the claimed invention because the resulting device would merely shift *Stoecker's* tamper, it would not steer it.

In response to Applicant's previous arguments, the Examiner stated in the Advisory Action that "nowhere in the claims does the operator element preclude a handle that performs physical work to steer the compactor." Applicant believes that the amendment to claim 1 adequately addresses the Examiner's concern in that it requires a power steering control lever that controls the positioning unit via an electric signal.

The Examiner must concede that *Stoecker's* machine is steered manually by providing direct physical steering forces to a handle. The handle lacks any mechanism whatsoever for adjusting the relationship of its exciter shafts or otherwise effecting a servo-controlled steering operation of the type claimed. Hence, providing a sensor that detects the position of the handle and that produces a corresponding steering command signal would serve no effect. There would be nothing to control in order to steer the machine. The operator would still have to steer the machine manually. To render the machine steerable in the manner claimed would require modifications to *Stoecker's* machine not addressed in any of the Examiner's Office Actions.

Neither Riedl (cited against claims 2, 10, and 11) nor *Artzberger* (cited against claim 9) cure the above-noted deficiencies in *Stoecker* and *Ishibashi et al.* Neither reference suggests modifying *Stoecker* to permit an operator to both steer a compaction plate machine

{00066672.DOC \}

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 17 of 19

and control its direction of travel using a sensor to detect movement of a power steering control lever or some other manually manipulated operator element that generates a signal used to control a positioning unit in order to both steer a soil compaction device and to control its direction of travel.

Thus, the references alone or in combination fail to teach or suggest the soil compaction device of amended claim 1. Dependent claims 2-12 are believed to be in condition for allowance for incorporating by reference the limitations of claim 1 and for defining additional features of the invention, which, when considered in combination with those of claim 1, are neither disclosed nor suggested by the prior art relied upon in the rejection.

In light of the amendments to claim 1 and the foregoing arguments, withdrawal of the rejection of claims 1-12 is respectfully requested.

C. Rejections Based on *Riedl* in View of *Crum et al.*

Claims 1-6, 8, 13, 15-17 stand rejected under § 103(a) as being unpatentable over *Riedel* in view of *Crum et al.*

Regarding claims 1 and 13, the applicant respectfully traverses this rejection because the cited references do not teach or suggest each and every element of the novel subject matter disclosed and set forth in amended claims 1 and 13. Specifically, claims 1 and 13, as amended, require an oscillator that acts on the soil contact plate, has at least two eccentric masses that rotate in opposite directions whose phase relationship can be adjusted relative to one another by a positioning unit in order to control the direction of soil compaction device travel and to steer the soil compaction device in a yawing motion. Neither *Riedel* nor *Crum et al.* alone or in combination teach these limitations.

{00066672.DOC\}

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 18 of 19

There is no disclosure in *Riedl* of adjusting the phase relationships of shafts and/or eccentric weights to effect a side to side, yawing, or curvilinear steering of the type required by amended claims 1 and 13. In response to Applicant's previous arguments regarding this point, the Examiner stated in the Advisory Action that the claims did not positively recite such differences. Applicant believes that the amendment to claim 1 and 13 adequately address the Examiner's concern in that they now positively require two eccentric masses that rotate in opposite directions whose phase relationship can be adjusted relative to one another by a positioning unit in order to control the direction of soil compaction device travel and to steer the soil compaction device in a yawing motion.

Neither Sutherland (cited against claims 10-12), *Garnjost* (cited against claims 7, 14, 18) nor *Artzberger* (cited against claim 9) cure the above-noted deficiencies in *Riedl* and *Crum et al.* None of the references suggests modifying *Riedel* to include an oscillator that acts on the soil contact plate, has at least two eccentric masses that rotate in opposite directions whose phase relationship can be adjusted relative to one another by a positioning unit in order to control the direction of soil compaction device travel and to steer the soil compaction device in a yawing motion to permit an operator to both steer a compaction plate machine and control its direction of travel.

Thus, the references alone or in combination fail to teach or suggest the soil compaction device of amended claims 1 and 13. Dependent claims 2-12 and 14-20 are believed to be in condition for allowance for incorporating by reference the limitations of claims 1 and 13 and for defining additional features of the invention, which, when considered in combination with those of claim 1 and 13, are neither disclosed nor suggested by the prior art relied upon in the rejection.

{00066672.DOC\}

RECEIVED
CENTRAL FAX CENTER
SEP 06 2011

U.S. Patent Application Serial No. 09/889,183
Attorney Docket No. 72.049
Page 19 of 19

In light of the amendments to claim 1 and 13 and the foregoing arguments, withdrawal of the rejection of claims 1-18 and allowance of claims 1-20 is respectfully requested.

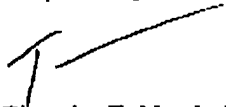
CONCLUSION

It is submitted that claims 1-20 are in compliance with 35 U.S.C. §§ 112 and 103 and each define patentable subject matter. A Notice of Allowance is therefore respectfully requested.

A fee in the amount of \$ is believed due for the Request for Continued Examination (\$810 large entity) and the Petition to Revive (\$1,620 large entity). The director is authorized to charge the \$2,430 to Deposit Account 50-1170. No other fee is believed to be payable with this communication. Nevertheless, should the Examiner consider any other fees to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment to Deposit Account No. 50-1170.

The Examiner is invited to contact the undersigned by telephone if it would help expedite the prosecution and allowance of this application.

Respectfully submitted,


Timothy E. Newholm
Registration No. 34, 400

Dated: September 6, 2011

Customer Account No.: 23598
Boyle Fredrickson, S.C.
840 North Plankinton Avenue
Milwaukee, WI 53203
Telephone: (414) 225-9755
Facsimile: (414) 225-9753

{00066672.DOC\}